CLEAN COPY OF CLAIMS AS AMENDED HEREIN

19. A method of accomplishing chemical mechanical planarization of a Cu/Ta/TaN surface comprising:

providing a single-step slurry solution including a combination selected from the group consisting of (i) H_2O_2 with H_3PO_4, H_2SO_4, HNO_3, oxalic acid, acetic acid, or organic acid, (ii) HNO_3 with H_3PO_4, or H_2SO_4; and (iii) an oxidizing reagent with HF;

applying the solution to the surface; and

planarizing both the Cu and at least one of the Ta and TaN during a single processing step.

20. The method of claim 19, wherein the slurry solution is selected from the group consisting of H_2O_2 with H_3PO_4, H_2SO_4, HNO_3, oxalic acid, or organic acid.

21. The method of claim 19, wherein the slurry solution is selected from the group consisting of HNO_3 with H_3PO_4, or H_2SO_4.

22. The method of claim 19, wherein the slurry solution is selected from the group consisting of an oxidizing reagent with HF.

23. The method of claim 19, further including in the slurry solution an additive selected from the group consisting of selected from the group consisting of HCI, aliphatic alcohols, butylated hydroxytoluene, Agidol-2,2,6-di-tert-butyl-4[(dimethylamino)methyl]phenol, 2,6-di-tert-4N,N-dimethylaminomethylphenol, borax, ethylene glycol, $ZnSO_4$, methanol, propanol, poly(oxyethylene)lauryl ether, malic acid, $HOOC(CX_2)_nCOOH$ wherein X=OH, amine, H and n=1-4), 3% tartaric acid, 1% ethylene glycol, 1,2,4-triazole, 1,2,3-triazole, tetrazole, nonionic surfactant, ethanol, triflouroethanol, SiF6, organic salt surfactant, polyvinyl alcohol, diphenylsulfamic acid, sodium oxalate, bezotriazole,

sodium lignosulfonate, glycol, gelatin carboxymethylcellulose, amines, heavy metal salts, salts of Cu and Ta, KCl, $CuCl_2$, $SnCl_2$, propylene glycol, 2-ethyl-hexylamine, copper carbonate, low molecular weight alcohols, glycols, phenols, aliphatic alcohols, polyvinylalcohols, anionic surfactants, cationic surfactants, fluorocarbon-based surfactants, nonionic surfactants having the properties of preferentially adhering to certain materials, modifying thereby the chemical reactivity where so adhered, polyvinyl alcohol solution stabilizers and species inhibiting spontaneous decomposition of oxidizing agents, wetting agents or mixtures thereof.

24. The method of claim 19, further including in the slurry solution at least one of CuCl, FeCl, and $FeCl_3$, in the slurry solution.

25. The method of claim 19, further including in the slurry solution at least one of $Cu(NO_3)_2$, $CuSO_4$, EDTA, $FeNO_3$, KOH, $K_2S_2O_5$, $(NH_4)_2S_2O_8$, $CuNH_4Cl_3$, NaOH, $NaClO_3$, $NaNO_3$, $Na_2S_2O_8$, NH_4F, or NH_4OH.

26. The method of claim 19, further including in the slurry solution at least one of a molybdenum salt and phenolsulfonic acid in the slurry solution.

27. The method of claim 19, further comprising including abrasive particles selected from the group consisting SiO_2, Al_2O_3 metallic and solid elemental particles, polymer particles, oxides, carbides, fluorides, carbonates, borides, nitrides, hydroxides of Al, Ag, Au, Ca, Ce, Cr, Cu, Fe, Gd, Ge, La, In, Hf, Mn, Ng, Ni, Nd, Pb, Pt, P, Sb, Sc, Sn, Tb, Ti, Ta, Th, Y, W, Zn, Zr, or mixtures thereof.

28. The method of claim 19, wherein the step of planarizing removes the Cu and at least one of the Ti and TiN with approximately 1:1 selectivity.

29. The slurry solution of claim 1 comprising H_2O_2.

30. The slurry solution of claim 1 comprising H_3PO_4.

31. The slurry solution of claim 1 comprising H_2SO_4.

32. The slurry solution of claim 1 comprising HNO_3.

33. The slurry solution of claim 1 comprising an organic acid.

34. A reagent mixture for polishing a surface comprising at least one metal having a high rate of diffusion and at least one barrier layer that is mechanically hard, the mixture comprising:

a) an oxidizing reactant selected from the group consisting of H_2O_2, HNO_3 and mixtures thereof; and

b) a co-reactant is selected from the group consisting of H_3PO_4, H_2SO_4, HNO_3, oxalic acid, acetic acid, organic acids and mixtures thereof,

wherein the reagent mixture achieves about a 1:1 removal selectivity between the at least one metal and the at least one barrier layer.

35. The reagent mixture of claim 34, further comprising abrasive particles selected from the group consisting SiO_2, Al_2O_3 metallic and solid elemental particles, polymer particles, oxides, carbides, fluorides, carbonates, borides, nitrides, hydroxides of Al, Ag, Au, Ca, Ce, Cr, Cu, Fe, Gd, Ge, La, In, Hf, Mn, Ng, Ni, Nd, Pb, Pt, P, Sb, Sc, Sn, Tb, Ti, Ta, Th, Y, W, Zn, Zr or mixtures thereof.

36. The reagent mixture of claim 35, wherein said abrasive particles are coated.

37. The reagent mixture of claim 36, wherein said coating is a chemically active species.

38. The reagent mixture of claim 37, wherein said coating is CeO_2.

39. The reagent mixture of claim 35, wherein said particles are produced by the sol method.

40. The reagent mixture of claim 35, wherein said particles have a range of sizes from approximately 4 nanometers to approximately 5 micrometers.

41. The reagent mixture of claim 40, wherein said particles have a size less than approximately 5 micrometers.

42. The reagent mixture of claim 34, wherein the at least one metal comprises copper.

43. The reagent mixture of claim 34, wherein the at least one barrier layer comprises tantalum or tantalum nitride.